

Serial No. 10/060,057

R E M A R K S

The specification has been amended for clarity and to correct syntax errors.

Claims 1, 3 and 5-9 have been amended to eliminate means plus function language in the apparatus claims and broaden the method claims so positive limitations have been cancelled from the portion of the claims after the transitional phrase. Similar limitations are now included, in broader terms, in the preamble.

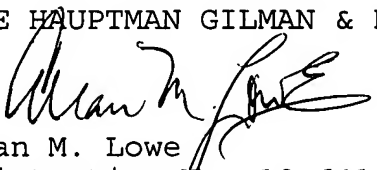
Claims 10 and 11 have been added to provide applicants with the protection to which they are deemed entitled.

Entry of the amendment is respectfully requested and deemed in order.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

LOWE HAUPTMAN GILMAN & BERNER, LLP

  
Allan M. Lowe  
Registration No. 19,641

1700 Diagonal Road, Suite 310  
Alexandria, Virginia 22314  
(703) 684-1111/FAX: (703) 518-5499  
AML:cjf  
Date: May 9, 2002

MARKED-UP VERSION SHOWING CHANGES

IN THE SPECIFICATION:

Page 2, paragraph 1:

[In the particular example of a Hewlett Packard UX type host device], In a known Unix type host device communicating with a tape drive data storage back-up peripheral, via a SCSI interface, there has been experienced the particular problem that hangs of the SCSI interface may occur, even when the behavior of two or more tape drive units 201-203 and the host computer is perfectly legal, i.e. within the SCSI specification.

Page 2, under Summary of the Invention, the first paragraph:

According to one aspect of the present invention there is provided a method of operation of a SCSI enabled device, said method comprising [the steps of]:

receiving a message parity error message over a SCSI bus;

determining whether said SCSI enabled device is in a data transfer state;

if said SCSI enabled device is in a data transfer state, then generating a response message to an initiator, said response message notifying said initiator device that a previous data transfer operation will be resumed.

Page 3, paragraph 1:

According to a second aspect of the present invention there is provided a method of operating a SCSI driver, said method comprising [the steps of]:

carrying out a data transfer phase;

receiving a message parity error message following said data transfer phase; and

sending a restore data pointer message, after receiving said message parity error message.

Page 4, before "Brief Description of the Drawings", please add:

The invention includes an SCSI enabled device operable for:  
receiving a message parity error message over a SCSI bus;  
determining whether said SCSI enabled device is in a data transfer state; and  
generating a response signal to an initiator device from which a data transfer phase was initiated, said response message notifying said initiator device that a previous data transfer operation will be recommenced.

The invention includes an SCSI driver operable for:  
carrying out a data transfer phase;  
receiving a message parity error message following said data transfer phase;

recognizing that a message parity error message has occurred immediately after a data transfer phase; and  
sending a restore data pointer message, after receiving said message parity error message.

Page 5, the last paragraph on the page:

In the known SCSI protocol, a host device is permitted to send message bytes during a data transfer phase. Some messages are meaningful [and] when they occur during a data transfer phase. However, other types of messages are meaningless and inappropriate when they occur during a data transfer phase.

Page 6, first full paragraph:

Normally, messages sent during a data transfer phase would be messages which are appropriate, i.e. have a meaning in the context of the data transfer phase. Ideally, messages of a meaningless or inappropriate type would not be sent during a data transfer phase by a [an interior] host computer device. However, in practice, meaningless and/or inappropriate messages do occur during data transfer phases and are sent by host computer devices onto a SCSI bus.

Page 6, third full paragraph:

An example of an inappropriate message which could be received during a data transfer phase comprises a message parity error message during a SCSI data phase. A message parity error message (MPER) indicates to a driver that there has been some kind of

parity error detected during a message phase. This would be inappropriate immediately after a data transfer, because the message parity error message relates to a message, whereas the last set of signals on the SCSI bus were data transfer, not messages. Therefore, in that context, the message parity error message is meaningless. It is inappropriate to send the message parity error message to a SCSI bus, when there has been no message to which that message parity error message relates.

Page 7, second full paragraph:

Referring to Fig. 3 herein there is illustrated schematically components of a tape data storage device. The tape data storage device 300 comprises a SCSI interface 301 capable of communicating with a SCSI bus 302; at least one data processor 303; a buffer memory 304; a tape drive mechanism 305 having a port for accepting a removable tape data storage medium 306. A controller 307 for controlling input of data through the SCSI interface 301, controlling and managing data storage in the buffer memory 304, and controlling data storage and management in the tape drive mechanism 305. The tape data storage device also comprises a power supply, and a liquid crystal display (not shown) for showing an operational status of the data storage device as is known in the prior art.

Page 7, fourth full paragraph:

Controller 307 contains program data written in a conventional [program] programming language for example C, or C++ as is known to

those skilled in the art. The program data comprises an algorithm for causing the SCSI enabled peripheral device to operate in modes of operation as follows.

Page 7, fifth full paragraph:

There will now be described operation of a tape data storage device for overcoming the problem of hangs caused under conditions in which a host computer device seizes a SCSI bus during a bus free period after an arbitration host selection period and [commend] commence write/read period.

Pages 8 and 9, the paragraph bridging the pages:

Referring to Fig. 5 herein there is illustrated schematically process steps carried out by an SCSI driver, upon receiving a message parity error message (MPEM) immediately after data transfer phase. The SCSI driver is in an initial state 500, which can be any state. A message parity error message 501 is received on the SCSI bus. Upon receiving the message parity error message, the SCSI driver checks whether the state of the driver is in a data transfer phase in process 502. If the SCSI driver is not in a data transfer phase, then in process 503, the SCSI driver continues to respond to the message parity error message in conventional manner and then reverts to any other state 504. However, if in process 502 the state of the driver immediately before receipt of the message parity error message was a data transfer state, then in process [503] 505 the SCSI driver recognizes the message parity

Serial No. 10/060,057

error message as being a SCSI no-operation message. In process [504] 506, the SCSI driver responds to the message parity error message by making a response to a no-operation message, and then reverts to a previous state [504] 507.

Page 9, the first full paragraph:

[As] An SCSI no-operation message is a message which an initiator device sends to a target device, when the target is requesting a message and the initiator does not have any other valid message to send. In other words, the no-operation message is simply a message which is sent by a host computer to a peripheral, to ignore the message.

IN THE CLAIMS:

Please amend claims 1, 3 and 5-9 as follows:

1. (Amended) A method of operation of [a] an SCSI enabled device in response to a parity error message coupled over an SCSI enabled bus, said method comprising [the steps of]:

[receiving a message parity error message over a SCSI bus;]

determining whether said SCSI enabled device is in a data transfer state;

if said SCSI enabled device is in a data transfer state, then generating a response message to an initiator, said response message notifying said initiator device that a previous data transfer operation will be recommenced.

3. (Amended) A method of operating [a] an SCSI driver, said method comprising [the steps of]:

carrying out a data transfer phase;

receiving a [message] parity error message following said data transfer phase; and

sending a restore data pointer message, after receiving said [message] parity error message.

5. (Amended) [A] An SCSI enabled device, comprising:

[means] a receiver for receiving a [message] parity error message over [a] an SCSI bus;

[means] a processor arrangement for determining whether said SCSI enabled device is in a data transfer state[;], and [means] for generating a response signal to an initiator device from which a data transfer phase was initiated, said response message notifying said initiator device that a previous data transfer operation will be recommenced.

6. (Amended) [A] An SCSI driver comprising:

[means] a processor arrangement for carrying out a data transfer phase;

[means] a receiver for receiving a [message] parity error message following said data transfer phase;

[means] the processor arrangement being arranged for [recognising] recognizing that a [message] parity error message has occurred immediately after a data transfer phase; and



[means] a sender for sending a restore data pointer message, after receiving said [message] parity error message.

7. (Amended) The SCSI driver as claimed in [Claim] claim 6, where said processor arrangement [driver operates] is arranged to send a message for recommencing said data transfer phase after sending said restore data pointer message.

8. (Amended) [Program] A program [data] for instructing a processor to perform SCSI operations, said operations comprising:  
determining whether [a] an SCSI [message] parity error message has been received by a device;

determining whether said device is in a data transfer state;  
if said device is in data transfer state, generating a response message[, said response message] for notifying [a] an SCSI initiator device that a previous data transfer operation is to be recommenced.

9. (Amended) The program [data] as claimed in [Claim] claim 8, stored on a program data storage media selected from the set;  
a CD-ROM;  
a magnetic data storage medium.